

Assignment 4

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| Assignment date | 06-11-2022 |
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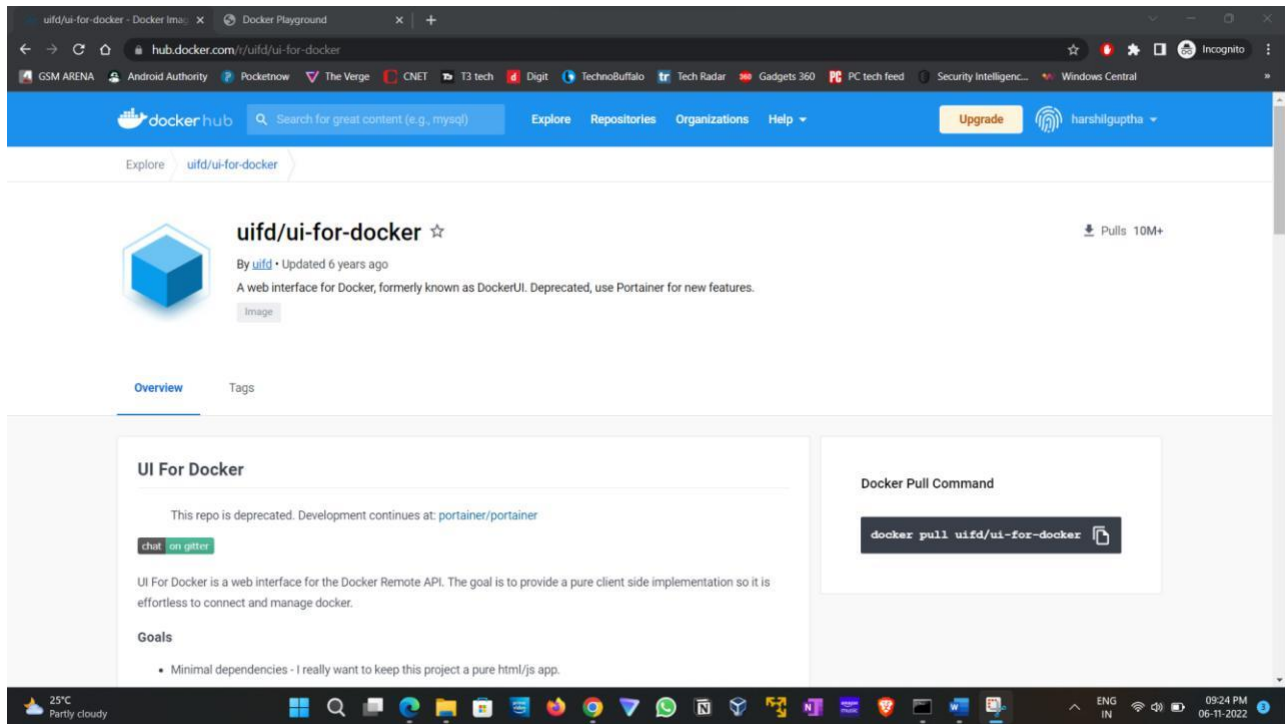
Question 1:

Pull an image from docker hub and run it on docker playground.

Solution 1:

```
docker pull uifd/ui-for-docker
```

```
docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
```



Docker playground:

The screenshot shows the Docker Playground interface in a web browser. The browser tabs include 'uifd/ui-for-docker - Docker ima...', 'Docker Playground', and 'docker run | Docker Documents...'. The address bar shows 'labs.play-with-docker.com/p/cdjth7m0qau000esrdp0#cdjth7m0_cdjthk60qau000esrdpg'. The interface features a sidebar on the left with a timer '03:53:41', a 'CLOSE SESSION' button, and an 'Instances' section with a '+ ADD NEW INSTANCE' button. The main area displays the instance 'cdjth7m0_cdjthk60qau000esrdpg' with its IP '192.168.0.8' and an 'OPEN PORT' button. Below this, there are 'DELETE' and 'EDITOR' buttons. The terminal window shows the following commands and output:

```
[model] (local) root@192.168.0.8 ~
$ docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
uifd/ui-for-docker  latest         965940f98fa5   6 years ago    8.1MB
[model] (local) root@192.168.0.8 ~
$ docker run -d -p 9000:9000 --privileged -v /var/run/docker.sock:/var/run/docker.sock uifd/ui-for-docker
ab4812e7bf2cde4f33b05baac16b2857aadb359141e1e8be944f7149b10c9a37
[model] (local) root@192.168.0.8 ~
$
```

Docker UI:

The screenshot shows the Docker UI interface. The top navigation bar includes 'Dashboard', 'Containers', 'Containers Network', 'Images', 'Networks', 'Volumes', and 'Info'. A 'Refresh' button is located on the right. The main content area is divided into two sections: 'Running Containers' and 'Status'. The 'Running Containers' section shows a single container 'serene_keller' with a status of 'Up 17 seconds'. The 'Status' section features a donut chart showing the distribution of container states: Running (green), Stopped (red), and Ghost (grey). Below the charts, there are two line graphs: 'Containers created' and 'Images created', both showing a count of 1 over time.

Question 2:

Create a docker file for the job portal app or hello world app and deploy it in docker desktop app.

Solution 2:

DockerFile

Dockerfile - Notepad

File Edit Format View Help

```
FROM python:3.8
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r requirements.txt
EXPOSE 5000
CMD ["python", "app.py"]
```

Bulid Docker image

```
C:\Windows\System32\cmd.exe

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker build -t hello-world .
[+] Building 160.4s (10/10) FINISHED
=> [internal] load build definition from Dockerfile                                0.0s
=> => transferring dockerfile: 194B                                              0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                  0.0s
=> [internal] load metadata for docker.io/library/python:3.8                    0.0s
[1/5] FROM docker.io/library/python:3.8@sha256:809d758211770a2dd083ecc4b10a8d851f6f77ef3f1e3f3620d0519190b8aa1d5 149.9s
=> resolve docker.io/library/python:3.8@sha256:809d758211770a2dd083ecc4b10a8d851f6f77ef3f1e3f3620d0519190b8aa1d5 0.0s
=> sha256:9000927ffeed8c17c25b215736d1851f0e2a054f57cdd7eb43937a1a47114480 0.56kB / 0.56kB 0.0s
=> sha256:17c9ed141fdd3387e5a1c07d4f9bba85ac1498e96829f3a55470d4504f7770 55.05MB / 55.05MB 65.2s
=> sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc99d8eaf13df3f80d78a70d 10.89MB / 10.89MB 8.7s
=> sha256:809d758211770a2dd083ecc4b10a8d851f6f77ef3f1e3f3620d0519190b8aa1d5 1.06kB / 1.06kB 0.0s
=> sha256:254101fc737ef899912ce9ad7488801a01e0a35bffc5e7d6bb8ed0b0e1c3f 2.22kB / 2.22kB 0.0s
=> sha256:de4a4c6caea8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 5.16MB / 5.16MB 18.3s
=> sha256:a7969cfff46e6a91291fd70b19ecbe93c03ea4ded0d14042aebc4c0c4211a43 54.59MB / 54.59MB 47.5s
=> sha256:74fbfde6af91271fb88f0a1716224dce5c0beead3609943792a9cb6ba4dd6d3d 196.87MB / 196.87MB 133.3s
=> sha256:16fe51aed809f36017fe42b590b1a622b29e0e8c3622e92e13df14578825eb37 6.29MB / 6.29MB 53.8s
=> sha256:2b979a731384cf50dac8fd255d381b70028d67b69b45c1a2b6c3ea10b92636d4 17.39MB / 17.39MB 68.0s
=> sha256:aac3c4359fdb43308669ae8ba70b2ebb713221ef3a3eca97f93590500f1506de1 234B / 234B 67.3s
=> extracting sha256:17c9ed141fdd3387e5a1c07d4f9bba85ac1498e96829f3a55470d4504f7770 18.0s
=> sha256:50780fbcfa0c82e5d24a9f70b07740a194c4fd7312a397860b4637f72ce91b6 2.89MB / 2.89MB 70.7s
=> extracting sha256:de4a4c6caea8801bb0b7377e10220a914da403bc93fa79663cbf2dcf1800b6f1 1.3s
=> extracting sha256:4edced8587e6c18412817019074f5e04a8ede4e2fc99d8eaf13df3f80d78a70d 1.0s
=> extracting sha256:a7969cfff46e6a91291fd70b19ecbe93c03ea4ded0d14042aebc4c0c4211a43 13.1s
=> extracting sha256:74fbfde6af91271fb88f0a1716224dce5c0beead3609943792a9cb6ba4dd6d3d 13.6s
=> extracting sha256:16fe51aed809f36017fe42b590b1a622b29e0e8c3622e92e13df14578825eb37 0.4s
=> extracting sha256:2b979a731384cf50dac8fd255d381b70028d67b69b45c1a2b6c3ea10b92636d4 1.1s
=> extracting sha256:aac3c4359fdb43308669ae8ba70b2ebb713221ef3a3eca97f93590500f1506de1 0.0s
=> extracting sha256:50780fbcfa0c82e5d24a9f70b07740a194c4fd7312a397860b4637f72ce91b6 0.4s
=> [internal] load build context                                                0.0s
=> => transferring context: 1.15kB                                              0.0s
[2/5] WORKDIR /app                                                            0.4s
[3/5] ADD . /app                                                            0.0s
[4/5] COPY requirements.txt /app                                              0.1s
[5/5] RUN python3 -m pip install -r requirements.txt                          3.8s
=> exporting to image                                                         0.2s
=> writing image sha256:f68fcdce5bb665f00e8f47bc4d137a4f7e053334840825bfdad71121d7d43f63 0.2s
=> naming to docker.io/library/hello-world                                   0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

Deploy it on Docker hub

Docker Desktop Upgrade plan

Containers Images Volumes Dev Environments **EXTA**

Extensions **EXTA** Add Extensions

Images on disk Last refresh: Never 1 Images Refresh to see disk usage Clean up

Images Give feedback

LOCAL REMOTE REPOSITORIES

Search

☐ In use only

| NAME ↑ | TAG | IMAGE ID | CREATED | SIZE |
|-------------|--------|--------------|------------------------|-----------|
| hello-world | latest | f68fcdce5bb6 | less than a minute ago | 919.36 MB |

RAM 3.66GB CPU 0.08% Connected to Hub v4.13.1

```
C:\Windows\System32\cmd.exe
Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
hello-world latest f68fcdce5bb6 5 minutes ago 919MB
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker login
Authenticating with existing credentials...
Login Succeeded
Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world itsmona14/hello-world
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push itsmona14/hello-world
Using default tag: latest
The push refers to repository [docker.io/itsmona14/hello-world]
373eb5cf4cab: Pushed
1e505dc1de5e: Pushed
098c85cb75c5: Pushed
ded8299b8f1a: Pushed
1fe0699af9f7: Mounted from library/python
156568a71809: Mounted from library/python
5fca8a94d542: Mounted from library/python
6b183c62e3d7: Mounted from library/python
882fd36bfd35: Mounted from library/python
d1dec9917839: Mounted from library/python
d38adf39e1dd: Mounted from library/python
4ed121b04368: Mounted from library/python
d9d07d703dd5: Mounted from library/python
latest: digest: sha256:46ff91edc98aaa5d7fff51ba708b6498af3c4f64612d9a990bf437497555fd82 size: 3049
E:\Study materials\Sem 7\IBM\Exercise\Assignment4>
```

Tested it using Docker playground

The screenshot shows the Docker Playground interface. On the left, there's a sidebar with a timer at 03:09:45, a 'CLOSE SESSION' button, and a list of instances. The main area displays details for a container named 'cdi0ji60_cdi18b63tccg00fmtsog'. It shows the IP address 192.168.0.13, memory usage at 27.73% (1.083GiB / 3.906GiB), and CPU usage at 0.16%. There are buttons for 'OPEN PORT' (set to 5000), 'DELETE', and 'EDITOR'. Below this, a terminal window shows the output of running a Docker container. The output indicates that the 'hello-world' image was pulled and the container is running a Flask app on port 5000. A warning message states: 'WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.'

Question 3:

Create an IBM container registry and deploy helloworld app or job portal app.

Solution 3:

My image link: au.icr.io/hello-world-app/hello-world

The screenshot shows a Windows Command Prompt window with the following commands and output:

```
C:\Users\Monashree>ibmcloud plugin install container-registry
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.0.2' found in repository 'IBM Cloud'
Attempting to download the binary file...
11.90 MiB / 11.90 MiB [=====] 100.00% 5s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\Monashree\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.

C:\Users\Monashree>ibmcloud login -a https://cloud.ibm.com
API endpoint: https://cloud.ibm.com

Email> 2019115055@smartinternz.com

Password>
Authenticating...
OK

Targeted account Monashree K's Account (302198646cc145ea8bc880cfb0a0d15d)

Select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. kr-seo
6. eu-de
7. eu-gb
8. ca-tor
9. us-south
10. us-east
11. br-sao
Enter a number> 9
882fd36bfd35: Pushing [=====] 110.5MB/529MB
d1dec9917839: Pushing [=====] 79.9MB/152MB

API endpoint: https://cloud.ibm.com
d9d07d703dd5: Pushing [=====] 67.45MB/124.1MB
d1dec9917839: Pushing [=====] 69.67MB/152MB
```

```
C:\Windows\System32\cmd.exe - docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker tag hello-world au.icr.io/hello-world-app/hello-world

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker push au.icr.io/hello-world-app/hello-world
Using default tag: latest
The push refers to repository [au.icr.io/hello-world-app/hello-world]
492bcd5cc009: Pushed
006e0938fc5e: Pushed
40b28ce0724f: Pushed
402dea3c8533: Pushed
f5d161bbe139: Pushed
1569e0d095ca6: Pushed
09e00da15d0c: Pushed
6b183c62e3d7: Mounted from hello-world-app/hello-world-app
882fd36bfd35: Mounted from hello-world-app/hello-world-app
d1dec9917839: Mounted from hello-world-app/hello-world-app
d38adf39e1dd: Mounted from hello-world-app/hello-world-app
4ed121b04368: Mounted from hello-world-app/hello-world-app
09d07d703dd5: Mounted from hello-world-app/hello-world-app
latest: digest: sha256:0036fe1456627bba779e865ba4793212e8332e6835b48c6b5814784adb70c46f size: 3049

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>ibmcloud cr image-list
Listing images...

Repository          Tag      Digest          Namespace      Created      Size      Security status
au.icr.io/hello-world-app/hello-world  latest  0036fe145662    hello-world-app  12 minutes ago  350 MB    -

OK

E:\Study materials\Sem 7\IBM\Exercise\Assignment4>docker run -p 5000:5000 au.icr.io/hello-world-app/hello-world
* Serving Flask app 'app'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.17.0.2:5000
Press CTRL+C to quit
172.17.0.1 - - [03/Nov/2022 19:35:58] "GET / HTTP/1.1" 200 -
```

Container Registry

- Quick start
- Namespaces 1
- Repositories 1**
- Images 1
- Trash 1
- Settings

Repositories

Location: Sydney

Search 🔍 🔗 🔖 Create +

| | Name | Image count | Namespace | Last updated |
|---|---|-------------|-----------------|----------------|
| 📄 | <div>hello-world</div> <div>au.icr.io/hello-world-app/hello-world</div> | 1 | hello-world-app | 15 minutes ago |

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Question 4:

Create a kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport.

Solution 4:

<https://raw.githubusercontent.com/itsmona14/IBM-Assignment-cloud/main/deployment.yaml>

```
apiVersion: v1
kind: Service
metadata:
  name: hello-world-deployment
spec:
  ports:
    - port: 5000
      targetPort: 5000
  selector:
    app: hello-world
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hello-world-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: hello-world
  template:
    metadata:
      labels:
        app: hello-world
    spec:
      containers:
        - name: hello-world
          image: au.icr.io/hello-world-app/hello-world
          imagePullPolicy: Always
          ports:
            - containerPort: 5000
```

The screenshot displays the IBM Cloud Kubernetes Dashboard for a cluster named 'mycluster-free'. The cluster is in a 'Normal' state and is scheduled to expire in 29 days. The dashboard provides a detailed overview of the cluster's components and configuration.

Cluster Overview:

- Node status:** 1 of 1 nodes are running in a 'Normal' state.
- Add-on status:** 0 of 0 add-ons are installed in a 'Normal' state.
- Master status:** The master node is in a 'Normal' state.
- Ingress status:** The ingress controller is in an 'Unknown' state.

Details:

| Property | Value |
|----------------------------|-----------------------|
| Cluster ID | cd11j3c0f0s6mchav0k1g |
| Version | 1.24.7_1542 |
| Infrastructure | Classic |
| Zones | Milan 01 |
| Created | 04/11/2022, 01:12 |
| Resource group | Default |
| Image security/enforcement | Enable |

